ORNJUCE

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Atari Computer Association of Orange County

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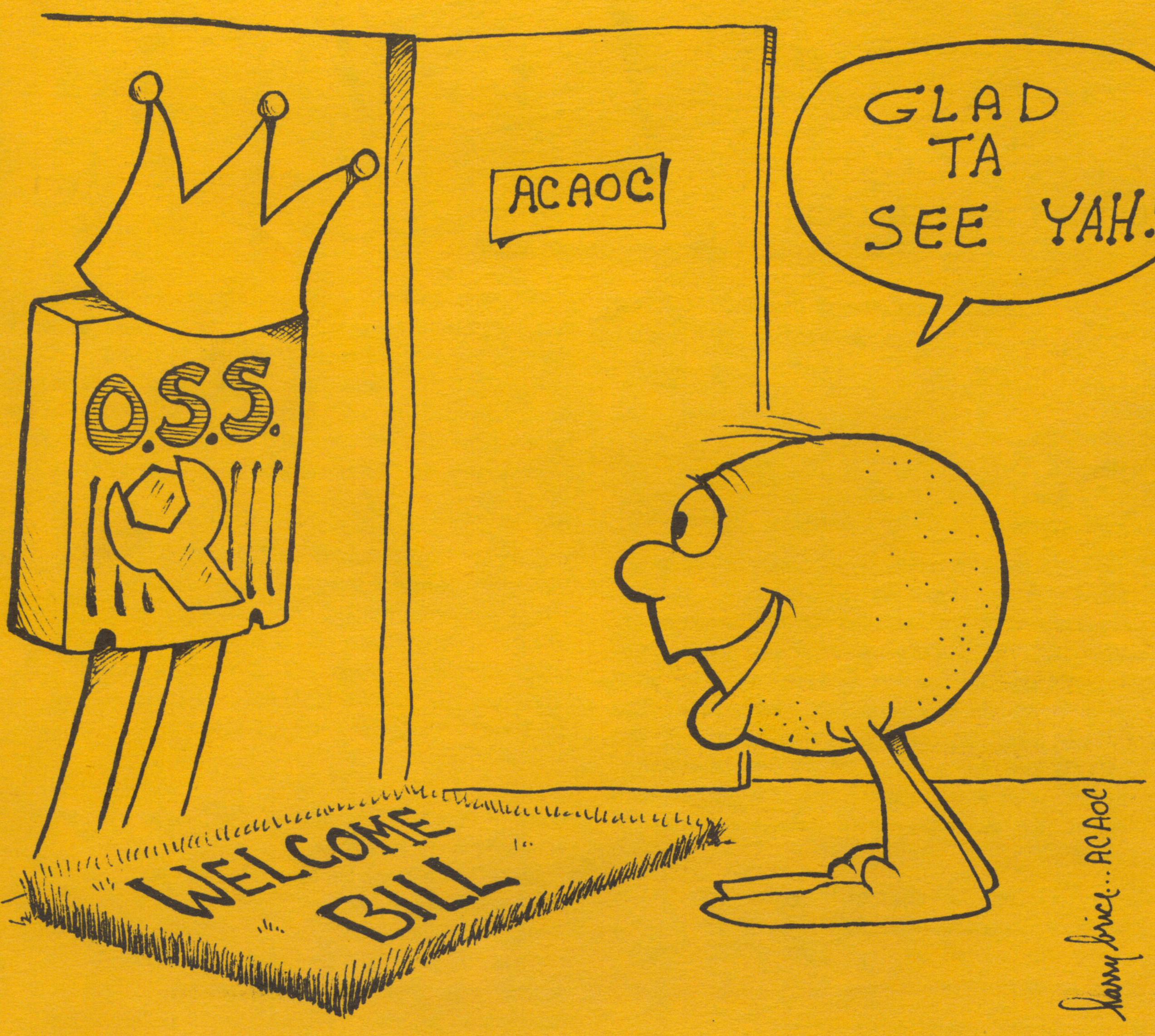

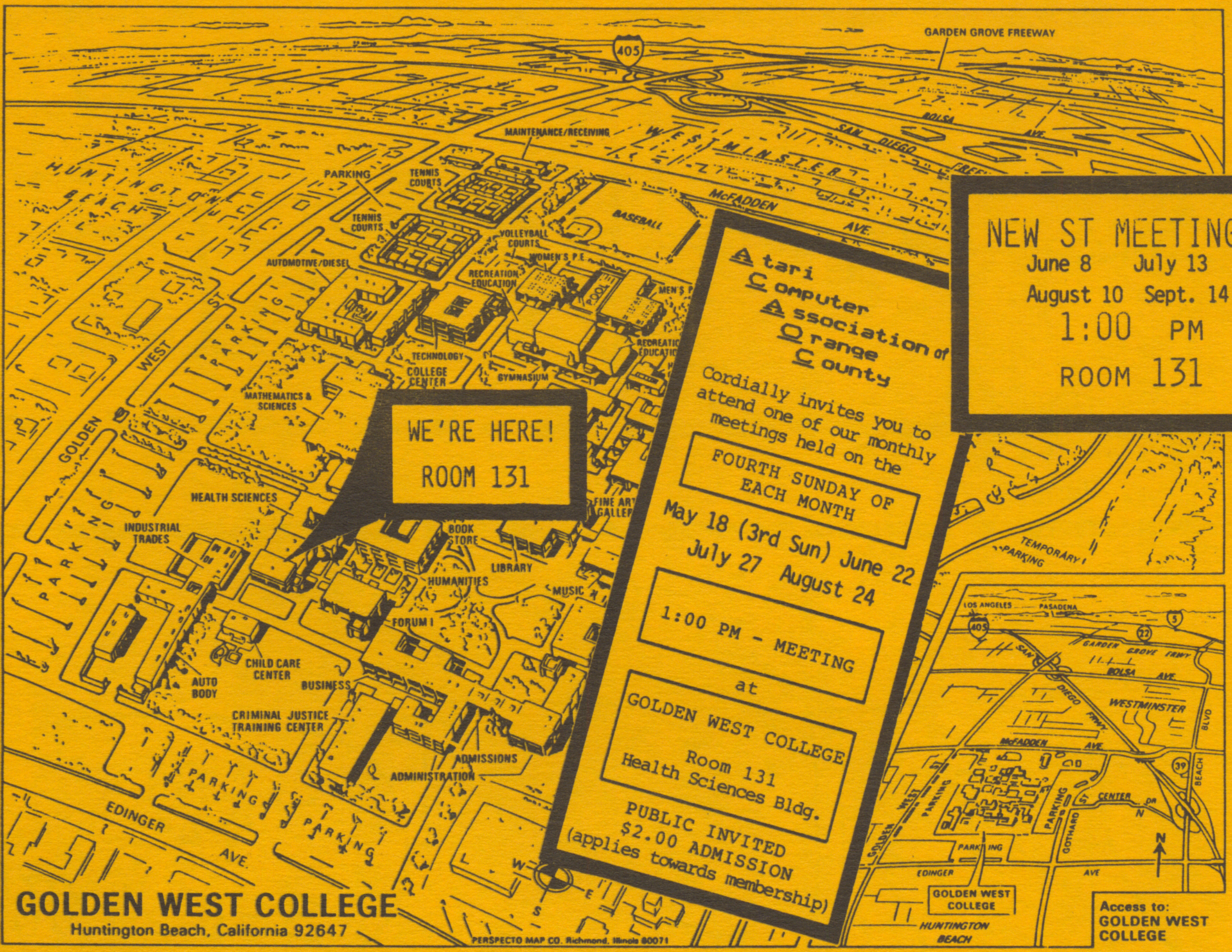

WE'RE HERE!
ROOM 131

NEW ST MEETING!!
June 8 July 13
August 10 Sept. 14
1:00 PM
ROOM 131

Atari
Computer
Association of
Orange
County

Cordially invites you to attend one of our monthly meetings held on the

FOURTH SUNDAY OF EACH MONTH

May 18 (3rd Sun) June 22
July 27 August 24

1:00 PM - MEETING

at

GOLDEN WEST COLLEGE
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(applies towards membership)

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Submit OrnJuce material to the editor at the meeting, by mail to the above address, or by modem to the ACAOC BBS. Material must be submitted to the editor by the third of the month for inclusion in the upcoming issue.

Advertising rates for the newsletter are:

Full page	$40.00	Half page	$25.00
Quarter page	$15.00	Business card	$10.00

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Payment must accompany copy. Make payment to ACAOC. Ad copy must be camera ready and received by the ACAOC editor no later than the sixth of the month for the ad to appear in the upcoming issue. Software, hardware, or related supplies valued for the same amount as ad charges are acceptable as payment. Merchandise must be new and current. The acceptance of merchandise submitted is subject to approval by the ACAOC.

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Newsletter Production: Donna Kavanagh

Atari Computer Association of Orange County
OrnJuce
July 1986
Volume 7, Issue 7

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COVER CAPTION CONTEST

We had several entries for the cover caption contest from the May issue. At the June 10 business meeting, the entries were read, and the winner chosen. The winning caption was submitted by Mike Fulton, and you can see it on the back cover of this issue. Mike wins a box of disks. The winning caption...

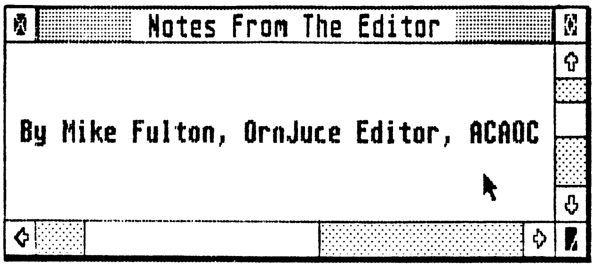
Mike Fulton "I thought YOU paid the dues!"

There are also three runners-up. Each of them wins a free ACAOC library disk of their choice. And we've decided to supply the disk, instead of using the member's disk as was stated in the May issue. The runners-up entries...

Jonathan Lew "Oh no! It's Space Invaders come true!"

Doug Broker "I hope that isn't a cookbook!"
(A reference to a Twilight Zone episode)

John Barraras, Jr. "I hope this guy hasn't been playing Space Invaders!"



Notes From The Editor

By Mike Fulton, OrnJuce Editor, ACAOC

The ACAOC is on the verge of the end of an era. At the June 22 meeting, the ACAOC will hold its annual elections. Some of the current officers are going to be stepping down, and others will be taking their place.

I won't say that being an ACAOC officer is a thankless job, because we do occasionally get a pat on the back. However, they are sometimes a bit few and far between. Despite this, most of us do get a certain sense of satisfaction from knowing that we do a good job.

One officer who has done an excellent job is Russell Kavanagh, as President. For nearly a year and a half, Russell has been the club's guiding hand.

A few months before Russell became president of the ACAOC, the club president was a man named Tom Mannos, whom some of you may remember. Tom was a good president, but he did have one flaw. He tried to take on too much at one time. He was doing several jobs in the ACAOC in addition to being the president. When personal pressures forced him to step down, it left a huge gap in the club. That might have been a fatal blow to the ACAOC if not for the willingness of some new people to step forward.

For a few months after Tom left the club, the ACAOC was run by a committee, which was more or less led by Russell. This committee was mostly made up of those people who would become the new officers of the club, and we had our hands full just trying to figure out the business left over from Tom's term of office, things like back taxes and other nasty things. But after a while, the committee got a handle on it, and things began to settle down. After Russell was officially named as ACAOC President, things began to get back to normal.

In fact, it could easily be argued that the months after Russell took over were some of the best that the ACAOC has ever known. We were able to get the newsletter back onto a regular monthly schedule, when it had missed 3 of the 7 months before. We had several excellent guest speakers at our meetings, including Bill Holt from BroderBund, and Sig Hartman and David Duberman from Atari. We began a club telephone hotline to enable people to easily get information about joining the club. We moved into a new, larger room to accommodate the influx of new members.

Also, I think that the club began to grow up somewhat after Russell took over as president. Those of you who have been around long enough may remember that the monthly meeting, for example, at one time had much more of a circus-like feel to it, with Tom as Ring Master. Now don't get me wrong. I enjoyed the club meetings when Tom was in charge, but I think that more people get more out of the club today.

Now it's time for things to start all over again. Russell feels that he can no longer devote the time needed to stay in the job and continue doing the same good work he has been. With the end of June, Russell will be stepping down as President. But since several officers are planning on staying in office, the transition should be much easier than before.

Many people in the club would make excellent officers. If you like the club, and want to insure that it keeps improving and growing, you should strongly consider stepping forward. You don't necessarily have to take on any major responsibilities; we need people to take on some of the little jobs as well.

Some of you may be thinking that you'd like to do something in the club, but you're afraid that you are too much of a beginner to be of any help. Don't worry about that. While some jobs do require a certain amount of expertise, others do not. In fact, some of them don't require any computer knowledge at all, just a willingness to help. You should not let your status as either a beginner or an expert keep you from stepping forward. We need warm bodies.

At the moment, we have no clear candidate for a new ACAOC President. At times, my own name and that of Bob Brodie have come up as possible candidates. But as for myself, I like being Editor and I want to continue with that. And Bob is planning on taking over the Librarian duties from Harjit Singh, who is also stepping down after doing an excellent job.

If we are unable to to find a new President, then it's likely that the job will be done by a combination of different people, probably the ACAOC Board of Directors.

Please don't let the club down. If you can help, please do. Even the smallest contributions are welcome.

Pres-itorial

by Russell Kavanagh,
President, ACAOC

Well, this is it ...the last Pres-itorial. At this point in time, it looks like there won't be anyone to continue on as president. There are no nominees for this month's election, and only a couple of new names for other offices. Don't worry, though. This last installment won't be another lecture on "getting involved." In fact, I can't say that I blame you at all. Take the president's office, for example. It really isn't all that great of a job. The pay is rotten, although the hours aren't too bad. The only reimbursement is getting to meet a few more people you didn't know before, being on the inside track (sometimes) for the latest Atari happenings, and just a general good feeling about "doing your best" with the resources (money and labor) available.

By not being president, you don't have to worry about getting the OrnJuce out on time, seeing that the meeting room is unlocked and the meeting set up, explaining why the library prices are what they are, debating why members are eligible for multiple prizes in the drawings, making sure that the monthly drawing is set up and tickets sold, soliciting advertising for the OrnJuce, responding to new member inquiries, helping people get on the BBS, providing and distributing club flyers, coordinating extra activities such as picnics and Christmas parties, working with other area Atari groups, collecting advertising payment that is past due, planning meetings with demos and speakers, keeping up with the club answering machine, getting everyone out of the meeting room and making sure that it is cleaned up, making sure there is enough computer equipment (and power cords) at the meeting, organizing special interest groups, setting up club sponsored classes, trying to make the monthly expenses end up less than the monthly income, and ...well, I believe that you get the idea. Of course, other officers and volunteers took on many of the tasks, but I still had to worry about it all getting done. Sometimes, it all didn't get done, and I hope you didn't notice.

As ex-president I can come to the July meeting, find a nice seat, and just watch! If the meeting starts a little late, so what! If only 27 tickets are sold in the drawing, so what! If I get bored, or the room gets too hot, I can just leave! Plus, I will be able to go out during the break and see what is there to buy. I won't have to rush in and make sure the meeting gets started again. In fact, I can just stand around for a while. Yes sir, being just another member sounds like fun!

All that is left is to thank a bunch of people for what they have given to me and to the club during the last 18 months. I should know better than to try this, because I'm afraid that I'll unintentionally leave someone out. So to everyone that contributed anything to the club, I say thanks. From OrnJuce articles to compliments (both of them), everything has been appreciated.

Extra special thanks go out to several people. The first member I want to thank is Harry Brice. Not many of you have had the pleasure of meeting Harry. He does all of the outstanding covers and wonderful illustrations for the OrnJuce. He is without a doubt the number one club supporter, and he can't even come to many meetings. In fact, he was club member for some time before he even owned an Atari. His duties as master silhoutte maker at Disneyland prevent him from coming to meetings except in the summer. He always gave me $10 to put in the club drawing just so he could help support the club. You should look forward to meeting him this summer, and by all means stop by his shop in Disneyland the next time you are there.

Another Harry you may not know is Harry Martin, and his wife Denise. They are no longer active in the club, but Harry Martin's BBS was our first. On top of being treasurer, Denise spent many hours putting up with the Atari congregations in their home. My thanks to them for their contributions, not to mention the great hospitality always offered.

Group thanks go out to members of the longest-lived special interest group the club has had ...the "Forth interest group." When I first joined the club I started attending the group meetings. The core of that group was made up of Greg Beauton, Al Cheser, Allen Doum, and myself. We met religiously, but the Forth portion gradually disappeared. Our ambitious project to program the best-ever word processing program in Forth fell by the wayside, but the friendships developed at those meetings have survived through to today.

As a previous officer, Greg Beauton performed "above and beyond the call of duty" for many years, and he provided the much-needed continuity from the "old" administration to the new. He was instrumental in getting our non-profit tax exempt status finally achieved. Al Cheser has supported the club with lots of help to members, and was very active in the reorganization of the club. Allen Doum has been the entertaining master of ceremonies for our monthly meetings. Also, Allen organized a very successful machine language class last spring.

One of the few comments I ever got on my newsletter articles was from Tim Cardin. He liked my review of a modem, and he followed up with a review of another modem in a following issue. He stepped in as librarian when the previous librarian suddenly resigned, and likewise took over as club BBS sysop when Harry Martin wasn't able to continue. I figured his ability to step in with little notice where someone left off qualified him for president. His response can't be printed here!

Of course, all of the current officers deserve my thanks. Secretary Margie McGonagle and her husband Kevin have a hard time making the meetings due to work schedules, but they are some of the newer members to get involved. Treasurer Erika Bentley and her husband Bill came forward and offered their help when we reorganized, and have graciously allowed the club to use their home for our monthly business meetings. Poor Erika sits outside the monthly club meetings taking care of new members, missing the meeting herself. OrnJuce editor Mike Fulton, along with organizing one of the best club newsletters around, has served in my opinion as a vice president as well. Mike has handled many extra tasks, such as arranging meeting speakers. He also runs our ST special interest group. Librarian Harjit Singh called me to volunteer for the library when Tim Cardin took over the BBS, and he has made quite a headway in improving it and making it more accessible to members. As book librarian, Dan Klaffke has organized Atari magazines, books, and other club newsletters for members to check out. Plus, he handles our modem rental program.

Other club volunteers also get a hearty thank you. Carl Grinstead has come to nearly every business meeting, and is always willing to take on some task, such as driving us to the ACENET meetings in Burbank. He can also be counted on to lug equipment to the meetings. Kevin Hammel has performed the task of collecting OrnJuce advertising, and he too has been a regular at the business meetings. Bob Brodie has been a big help to Harjit with the library, and Bob has even agreed to take over the library when Harjit resigns this month.

One club supporter that I haven't mentioned isn't even a member. The only meeting she came to was our 1985 Christmas party, and that was to serve the refreshments! My wife Donna has spent a lot of time helping me with club activities, and up until the last couple issues she did all of the paste-up for the OrnJuce. She's answered many a phone call about the club, and was patiently understanding when I went to meetings, special interest groups, or just general gab sessions with other friends in the club.

Now for the hard part ...thanking the remaining multitude of members or club supporters that put out a little extra for the club. The thanking is easy, but trying not to miss someone isn't. Here goes: Jim Bertok, Sharon Brown, Randy Dorn, Jim Fleming, Don Forgie, Joe and Florence Frisbee, Roger Hillman, Sy Keene, Mark Kline, Tippy Lewter, Dave Olblad, Terry and Virgina Palus, and Jim Rothrock.

Look over the names above again. They are the ones that are going to carry on the club banner. Well, at least some of them will. Several are no longer active in the club, and others have developed other computer interests that will most likely reduce their activity in our club. Some may have "peaked" and might not be willing to spend as much time in the future.

Once again, thanks to everyone. I hope you have gotten some good out of the club. Even if you haven't actively participated in club activities or duties, you are important to the club. Those that pay their dues and simply enjoy being in the club are just as necessary as any other club element. I'll be seeing you ...from the audience!

Russell

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May ST Meeting

The May 4 ACAOC meeting began with the usual Random Access question and answer period. Due to the large number of questions, this was continued after the break. Also after the break, a demonstration of a pair of programs written in ST BASIC was given. The first was a demonstration of accessing GEM VDI graphics routines from ST BASIC, and the second program was a demonstration of the ST's built-in sound chip.

May Meeting Report

The May 18 meeting of the ACAOC began with a presentation by Ken Yankelevitz of his EZRA system for the disabled. The EZRA system is a computer-based system for controlling household appliances via remote control, and uses an Atari 400 computer as its brain.

After the EZRA demonstration, there was a demonstration of the Covox sound digitizing system, given by Harjit Singh.

After the break, the Random Access question and answer period was led by Sy Keene. Although Sy was new to the job, he did an excellent job of fielding and passing off the questions. Perhaps Sy wants the job on a more permanent basis?

June Business Meeting

The June ACAOC Business meeting was held on June 10. Several topics were discussed, including the price structure of the ACAOC library disks, and the possibility of getting a hard disk drive for the ACAOC OrnJuce BBS.

Regarding the prices for the ACAOC library disks, several points were made. First of all, the price of the ACAOC's library disks has remained unchanged for several years. Also, it was noted that the advertised price of library disks from other Atari user groups (as observed from exchange newsletters) is much higher than that of the ACAOC.

The following decisions were made regarding the ACAOC library. First of all, the club will now charge $4.00 per disk for the 8-bit disks, and $5.00 per disk for the ST disks. This price will include a new disk, and the club will no longer copy library disks onto member-provided disks. This will greatly increase the efficiency of the library, since the librarian will not have to keep track of each individual member's disks. Also, it will prevent any possible damage to the club's and librarian's disk drives due to the use of poor-quality disks. There will be more details about this shortly.

Regarding the possibility of obtaining a hard disk for the club's OrnJuce BBS, the following points were raised. First, at the June CES show, ICD showed a Multi I/O add-on board for the 130XE, with printer and modem ports, a printer buffer, either 256K or 1 megabyte of memory for a Ramdisk, and lastly, a hard disk interface for either SASI or SCSI-based hard disk drives. The 256K version is supposed to have a list price of $199.

It was thought that perhaps the club might obtain one of these ICD boards, but without a hard disk. This way, it could be used in place of the borrowed 850 interface currently used, and a hard disk could be added at a later date. As soon as more information about this board is available, we will be investigating further.

ACAOC Helpline

Need Help? ACAOC Members with certain areas of expertise have agreed to help other members with any problems or questions in their area.

When calling the Helpline volunteers, please do so ONLY BETWEEN 7:00pm AND 8:30pm, unless other arrangements have been made beforehand.

Atari ST - Mike Fulton	(213) 860-9101
Modems - Dan Klaffke	(213) 864-2874
Hardware - Harjit Singh	(714) 827-3236
BASIC XL/XE - Al Cheser	(714) 635-8621
Programming - Bill Bentley	(714) 546-9482
Assembly Lang. - Allen Doum	(714) 542-8451
Graphics - Kevin Hammel	(714) 525-9413
Getting Started - Margie Mcgonagle	(213) 944-2890
Infocom Games - Margie McGonagle	(213) 944-2890
Sympathy - Erika Bentley	(714) 546-9482

June Meeting

The June 22 meeting of the ACAOC will feature a very special guest. Bill Wilkinson, author of the "Insight: Atari" and "Insight: ST" columns in Compute! Magazine, and co-owner of Optimized Systems Software, will be on hand. This will be an excellent meeting, and you won't want to miss it. Mark it down on your calendar!

Also at the June meeting, the ACAOC will be holding its annual elections. Be sure to be there if you want to get involved.

Coming in July

The July ST meeting will be held on July 13. The regular ACAOC meeting will be held July 27.

NOCCC Swap Meet

The North Orange County Computer Club will be holding a computer swap meet at Santa Ana College on July 20. Be there early to find the best bargains! It starts at 8:00 am and goes on until 1:00 pm.

ACAOC Election Day Coming Soon!

Here are the current nominations and openings for the ACAOC elections.

Board of Directors (5 positions) -- Erika Bentley, Tim Cardin, Carl Grinstead, Mike Fulton, Margie McGonagle
President -- open
Editor -- Mike Fulton
Secretary -- Margie McGonagle
Treasurer -- Erika Bentley
Sysop -- Tim Cardin
Librarian -- Bob Brodie

Welcome to our newest members:

Paul E. O'Malley
Adan Ramirez
Doug Fassett
Bradley Scott Erwin
Jerry Eddington
Harry L. Landry
Michael Marguardt
Doug Anderson
Charles Everts
Jay Tomlinson, Jr.
John Hershberger

June Expirations:

Darcy Anvar
Bill Bentley
Sharon Brown
Tom Christensen
Don Dixon
Shanon Fernald
Charles French
Bill Holland, Jr.
Mark Kline
Frank Loya
David Mclean
Scott Melugin
Glendon Raynes
Ronald Roslawsky
Albert Rutledge
Peter Sosrodjojo
Andrew Tait
Jimmie Weatherford
William Wright
Michael Au
Doug Brocker
Al Cheser
Charles Christy
Charles Donley
Jim Fleming
Jon Green
Doug Keller
Erik Larson
Charles Mcclure
John Matheson
David Perdue
Robin Ready
Jim Rothrock
George Schultz
George Sperakos
Tri Van To
Keith Wood

July Expirations:

Leroy Bainbridge
Harry Brice
Dave Carpenter
Bill Cousert
Gerry De Rienzo
Donald Foster
Matt Hallock
George King
John Lavrakas
Harry Maltby
Calvin Mclauglin
John Montanero
Gerlad Muir
Brian Ravenscroft
Dan Sherlock
Darryl Bradford
Tom Cantwell
Bertram Chalawsky
Ernest Dale
Ken Drachuk
Rick Girtman
Douglas Halpin
Jim Kline
David Lilly
Greg Marquez
Chris Mckinney
Leo Moos
Steve Peterson
Gary Reed

The following memberships have expired:

John Barreras, Jr.
Mathew Biewer
Thomas Cardin
Bix Dunlavy
Jerry Johnstone
Keven McGonagle
Cliff Morgan
Larry Weinheimer
Bill Bichel
Jim Bradford
Tom Collins
LeRoy Manlyn
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- TDI Modula – 2/ST
- OSS Personal Pascal
- DX – Droid
- DEGAS
- H&D Base

XE Software!

- Ultima IV
- Racing Destruction Set
- Movie Maker
- OSS Basic XE
- Sargon III Chess
- Koronis Rift
- The Eidolon
- Silent Service
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Assembly Language Course for the Worldwide Users Network

By Chris Crawford

This is the seventh part in an eight part series on assembly language programming. These articles are presented to the ACAOC OrnJuce readers through the Worldwide Users Network (WUN), initiated by Antic Magazine.

Lesson Seven
INTERRUPTS

We now approach one of the most difficult topics in the world of assembly: interrupts. This is such a messy topic that very few high-level languages make any provision for interrupts. Moreover, interrupts are one of the best ways around to crash your program hard. Programmers using interrupts must be very careful.

Let us suppose that your program can have a certain high-priority situation that needs immediate handling. The standard way to handle this problem is with a technique called polling. Your program runs out every now and then to check whether the high-priority situation has arisen. If it has, then the program responds to it. If not, it returns to its original work.

The problem with polling arises from the choice of polling interval. If you choose a long (infrequent) polling interval, then you may not respond to a demand quickly enough. If you choose a short (frequent) polling interval, then you will respond quickly to the demand, but you will never have any time for your regular computations.

You may think this type of situation is infrequent, but I can list quite a few situations where this is fairly common. Most I/O operations involve short bursts of computation at infrequent intervals, but they must be attended to on a tight schedule. For example, talking to a cassette deck involves very little real work from the CPU, but it must be done according to a precise schedule.

Even a disk drive is very slow by the standards of a 6502. Or how about keyboard response? When the human operator presses a button, he wants to see response NOW, not two or three seconds from now. Yet he could press that button at any time. So should your program sit on its hands waiting for a keypress, or should it ignore the human operator?

The solution to all of these problems is the interrupt. An interrupt is rather like a subroutine that can be called by a hardware action. There's a wire going into the 6502 called IRQ (Interrupt Request). That wire is normally quiet. But when something important happens, like a keypress, the computer's hardware puts a signal on that wire to interrupt the 6502. Here's what happens next:

The 6502 is busy running a program, but when it gets the interrupt signal it first checks the 1-bit (Interrupt) in the processor status register. If the 1-bit is set, it decides to ignore the interrupt, but if it is clear, it proceeds to the next step. It saves the processor status register and the current value of the program counter onto the stack.

Then it loads the program counter with the address stored at a special place in ROM -- it's either $FFFC or $FFFE, I can never get it straight. It then jumps to the address specified in ROM. It expects to find an interrupt service routine there, which presumably will deal with the keypress in the appropriate manner.

This routine will probably start by pushing the A, X, and Y registers into the stack to preserve them. When done, the routine will then pull them back off the stack and execute an RTI instruction, which causes the 6502 to pull the processor status register off the stack, and then pull the program counter off and resume operating.

The important thing about this rather complex sequence is that it allows the 6502 to drop whatever it is doing, service the interrupt, and then return to its earlier functioning without skipping a beat. The overriding goal of all this is to be absolutely certain that, when the 6502 returns from the interrupt, it returns in EXACTLY the same state that it was in when the interrupt hit. Otherwise, all sorts of horrible, untraceable bugs would result.

Imagine -- you're in the middle of some huge computation when an interrupt strikes. It subtly changes some very tiny parameter, just enough to insure that when the computation resumes, it will be slightly incorrect. When you try to find the bug, you discover that sometimes the code works perfectly and sometimes it fouls up, and you can't figure out why it should do that. Very bad business!

Moral: interrupts must follow a very tight discipline if they are to be of any utility.

Now let's get into some of the technical gore involving interrupts. First, there are two kinds of interrupt on the 6502. They are called IRQ (Interrupt Request) and NMI (Non-Maskable

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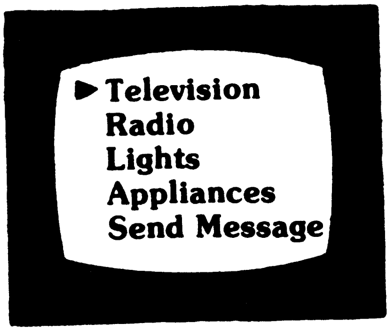

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Interrupt). The idea is that the IRQ type of interrupt can be masked out by setting the 1-bit with the SEI instruction. Then you use the CLI instruction to clear the 1-bit. Thus, IRQ is used for interrupts that have second priority.

NMI is reserved for first-priority interrupts, it is not maskable. However, the designers of the Atari computers routed IRQ and NMI through the POKEY and ANTIC chips respectively. And they put mask registers into these chips. Thus, the NMI can be masked out after all -- but only on Atari computers. Other 6502-based computers don't allow that.

The NMI and IRQ interrupts have separate interrupt vectors in ROM, so they can be treated differently. These vectors route the interrupts to the OS, but the OS is smart enough to route interrupt flow through some RAM locations. This means that you can intercept these two interrupts by altering the contents of the RAM vectors. (I won't list them here, there are a number of them for different situations.)

You must be careful, though, when altering such a RAM vector. What happens if an interrupt strikes after you have changed one byte of the address and before you have changed the other byte? The 6502 will fly off into never-never land and you will have crashed. Sure, it's unlikely, but good programmers don't count on luck to make their programs work. You have to guarantee that the interrupt won't occur before you mess with the vector. Use the SETVBV routine from the Atari's OS.

The two primary applications of interrupts with the Atari computers are for VBIS (Vertical Blank Interrupts) and DLIS (Display List Interrupts). These are very involved topics which are covered quite thoroughly in the book "De Re Atari." VBIs are most often used for animation control, input handling, and other time-critical operations. For example, the entire player I/O of my game Eastern Front (1941) is handled by VBIs. The scrolling, giving of orders, identifying units, and so forth is all done by VBIs. The mainline routine meanwhile figures the program's artificial intelligence.

DLIs can be used to enhance the graphics on the screen. You can get more colors, more use out of players, more scrolling, and more character sets with proper use of DLIs. Again, consult De Re Atari for a full treatment of this complex subject.

Interrupts are extremely difficult to debug because they tend to crash the system when they fail. You must exercise the strictest discipline in writing interrupt code. Timing problems, seldom of concern in mainline programming, can become critical with interrupts.

What happens, for example, if your interrupt service routine takes so much execution time that more interrupts arrive than you can service? Bad things, I assure you. You must always ask yourself, what happens if an interrupt strikes here? Or there? You must assume that an interrupt will strike at the worst possible time, and write your code to deal with that possibility.

The most important discipline to follow in writing interrupt service routines is this: keep your interrupt database separate from your mainline database. If the ISR can freely write to variables used by the mainline, you will certainly have problems when the mainline attempts to work with variables whose values change in unpredictable ways. You must set up ironclad rules about when the ISR can mess with variables used by the mainline, what it can do to them, and how it notifies the mainline routines that it has indeed altered them.

Approach interrupts with extreme caution. They are very powerful, but every programmer can tell you horror stories about debugging interrupt routines OJ

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Beneath Apple Manor

Reviewed by Mike Fulton, ACAOC OrnJuce

Beneath Apple Manor is a role playing adventure/fantasy arcade game which originally came out for the Apple II computers several years ago. A few years later, a version of the game for the Atari computers appeared. Now there is a new version for the Atari computers, with several enhancements.

You've heard tales of the hidden riches waiting in Apple Manor. Years ago, the last of the Apple family disappeared, ending a long reign of terror that had lasted for centuries. For three hundred years the Apples sent hellish monsters at night to wreck havoc on the townspeople and rob their wealth. It's rumored that the source of their power was a magical golden apple. Many have searched Apple Manor for the apple, but few have survived. Now it's your turn to try. Upon arriving, you find that the house has burned down. Searching through the ruins, you find a stone staircase leading downward. Down the stairs you walk, down, down Beneath Apple Manor!

Each adventurer has four attributes, Strength, Intelligence, Dexterity, and Body, displayed in text at the bottom of the screen. Each is important for certain things. For example, it doesn't take much intelligence to kick a door down, but it does take strength. Casting a spell properly requires intelligence, not the strength of Conan the Barbarian. The attributes determine how the adventurer responds during the game, as well as what kind of monsters will be guarding the treasures.

Ghosts, vampires, dragons, and other monsters peril you in your search for treasure. Each monster has its own distinct personality. For example, the ghost strikes fear into your heart, which costs you strength. On the other hand, a vampire will take away from all your attributes. Most treasures have at least one monster guarding them, and some have several.

Apple Manor has several different levels, each with its own treasures. You enter each level from the staircase. Successfully obtaining a treasure awards you a number of gold points depending on the treasure's size. After exploring all or part of a level, you can return to the staircase, where all the gold points you've gained on that level are converted to experience points. Now you are able to trade experience points for attribute points.

While in the staircase, you can trade experience points for attribute points, and store your gold to keep from losing it. You can also buy armor or weapons. (What is there, a vending machine??). There are several types of each, and the type of weapon and armor you use can augment your attributes. You can also take a brain scan, memorizing your current attributes. When you die in combat with a monster, you are resurrected to the attributes of your last brain scan. After trading a bunch of experience points for attribute points, you'll want to preserve your new attributes with a new scan. Otherwise, on your next death you'll revert to the attributes you had before.

As you gain attribute points, you can successfully advance though the different levels of the game. Eventually, you will find the golden apple. But it will be guarded by a horde of dragons, so you'd best be prepared! If you want, you can even ignore the golden apple and keep exploring! But the manual warns of strange and eerie things that can happen in the levels beneath the apple.

The manual includes tips on the monsters, fighting, and other aspects of the game. The monsters, attributes, and other commands are described. The saving and restoring of games is detailed. All in all, the manual is quite complete.

Beneath Apple Manor is not a new game, or even a new concept. In fact, this type of game is among the oldest kind of computer game. However, Beneath Apple Manor is the kind of game that withstands the test of time. Its graphics and sound effects aren't the most dazzling, but they do the job. The playability of Beneath Apple Manor is its strongest feature. It's hard to get tired of it, because it's never too easy. (At least not for me!) If you like adventure/fantasy role playing type games, you and Beneath Apple Manor will probably get along nicely.

Review: Ballblazer

by Russell Kavanagh, ACAOC OrnJuce

Mix stunning graphics, a catchy tune, dynamic sound effects, lots of action, and a pinch of strategy, you get the kind of game that computers were made for. Ballblazer, from Lucasfilm for the Atari 800/XL/XE (minimum 48K), is just that kind of game.

The early days of Ballblazer read like a grade B mystery novel. To be released by Atari during the heralded 1984 Atari/Olympic connection, for some reason it never appeared. Still, an unofficial version mysteriously appeared and became a favorite of the Atari user underground. The real Ballblazer resurfaced in 1985 as an Epyx product, and all Atari game enthusiasts should be pleased that this excellent Lucasfilm product finally appeared.

The premise of Ballblazer is quite straightforward. Playing on a rectangular grid, you must carry a ball down the field and shoot it through the goal. Your opponent, either a computer droid or a "real" player, plays defense and tries to get the ball from you and then score at the other end.

To spice the game up a bit from a simple two-man soccer game, the game is staged in the 31st century. As you would expect, the game play has evolved accordingly. You participate from within your "Rotofoil," a futuristic bumper car. The ball is a "Plasmaorb," which floats above the playing field. The Plasmaorb is captured by your Rotofoil's forcefield, allowing you to carry it down the field.

The Ballblazer display is split into two 3-D screens. One is your view of the playing field, the other is your opponent's view. At the start, you face your opponent across the field, waiting for the serve. As you head for the Plasmaorb, the grid flashes by, creating an exciting sense of motion. If you reach the Plasmaorb first, it will be captured by your "pullfield," and your Rotofoil will automatically turn towards the goal. As the goal looms into view, you set up for the shot. Pushing the joystick button activates your "pushfield" to shoot the ball, and, you hope, score a goal.

Defensively, you attempt to overtake the opponent, and when close enough, activate your pushfield to jar your opponents grip on the ball. An audible "buzz" lets you know you are getting within defensive range of the ball.

Scoring a goal is also complicated by the goalposts. They are always moving back and forth at end of the field. Plus, they narrow as each goal is scored. The number of points scored is based on the difficulty of the shot. Close up only scores one point, and the really "way back" shots ring up three points.

Because of the unique 3-D perspective, Ballblazer does take some getting used to. It is simple enough to play, but at first even the lowest level computer droid will probably run you in the ground. But with a little practice and a good understanding of your Rotofoil, the game becomes much more playable. When first playing, the most disconcerting effect is the "auto-direction" logic of your Rotofoil. Until you realize what is happening, you can become easily disoriented. Anytime you have the Plasmaorb, you will be automatically turned toward your goal. If you don't have the Plasmaorb, you will be automatically turned to face the Plasmaorb. These automatic actions will at first throw you off as you try to maneuver. However, once you realize and accept the Rotofoil's design, it is actually an advantage. When in doubt, go forward!

The one-player mode provides nine levels of skill. Although the game is very playable against the computer, the ultimate play is live head-to-head action. The standard game is three minutes, and you will not see a more intense three minutes between two players. No doubt about it, this game is a real joystick buster.

All of the games released by Lucasfilm Games have taken the art of game programming to the limit of the computer, and Ballblazer, one of their first offerings, is a fine example. The only criticism I can think of is that although skill levels are supported in the one-player game, there is no handicapping in the two-player mode. This would be really helpful to give your uninitiated friends a chance when you corner them to play a few games.

Although the premise of the game is very simple, the graphics, sound, and playability are excellent. As a one-player game, Ballblazer is certainly fun, though maybe somewhat limited on long term appeal. But as a two-player game, it has no match. I think that Ballblazer is the best two-player action game available. It's quick to play, it's full of action, and it requires little effort to become skilled enough to enjoy playing. Ballblazer should be added to your Lucasfilm collection, or if you haven't started a Lucasfilm collection, make it your first. OJ

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**** SOME ITEMS SUBJECT TO STOCK ON HAND ****

The Party Quiz Game

Reviewed by Jonathan Lew, ACAOC OrnJuce

What interested me most about Suncom's Party Quiz Game was the use of four special four-button controllers, included in the package, with the trivia software. Actually, what got me to buy Party Quiz was the price, but more on that later.

Party Quiz comes with 2 disks. The first is the program itself, and the second is the General Edition #1 question disk. The program is a fast paced multiple choice trivia game. Some options can be set before the game begins. You may use questions from the program disk itself, or from a question disk. Up to four people or four teams can play. The response time for answering questions can be set within a range of three to ten seconds. Each game is broken up into a series of rounds, each of which consists of ten questions. A game can be set to have from five to twenty rounds. Another option is handicapping. A handicapped player is given half the time to answer a question that the other players get.

There are two types of of games from which to choose. The first is the social game. In the social mode, all players have a chance to answer each question. In the competitive mode, the players compete to be the first to answer the question, and only the first correct answer wins points.

After the options are set, the game begins. The Party Quiz screen is set up with each players score at the top, the amount of time remaining to answer the question at the bottom, and the question and possible answers in the middle. For the multiple choice questions there are four answers from which to choose. Some questions are True/False, and of course only have two choices.

Players answer questions by pressing the correct button on their controller. Each controller has four big buttons, labeled "1" through "4." All the player has to do is press the button number corresponding with the answer number. A short tune is played if the guess is correct. If not, an error buzz is sounded and the correct answer is shown.

There are a few added features included that make Party Quiz special. Before starting a game, you may start a "controller diagnostic test." This tests if the controllers and buttons are working properly, which can be very useful. Another special feature is the lightning bonus rounds. On rounds 4, 7, 11, 15, and 19, one player at a time is given twenty seconds to answer up to ten questions as quickly as possible, like in the last part of the Family Feud TV game show. A white scoring area on the bottom of the screen keeps track of the number of questions given, the number of correct answers, and the time remaining. Every two rounds, a "report card" is displayed. This shows each players score, along with a humorous comment and music. At the end of a game, players can record their initials with their score on the "Party Quiz University's Dean's List." The game may be paused anytime by pressing the space bar.

Expandability is a good feature of this game. Extra question disks may be bought, with specific subjects such as sports, education, entertainment, the bible, and general knowledge.

The only bad feature of Party Quiz is the nature of some of the questions it presents. For example, one came up about telephone area codes. Also, many words in the questions and answers are abbreviated. People are usually referred to only by their last names. Also, I wish there was some option to create your own questions.

Overall, Party Quiz is a game worth looking at, especially if you like trivia. It's a great game for parties, since many people can play. You can get Party Quiz for a very low price these days. I got mine from Computer Direct (mail order) for just $14.95 and $3.00 shipping. They also have the extra question disks for $11.95 each. You may still be able to find it at Service Merchandise or Toys R Us. So what are you waiting for?

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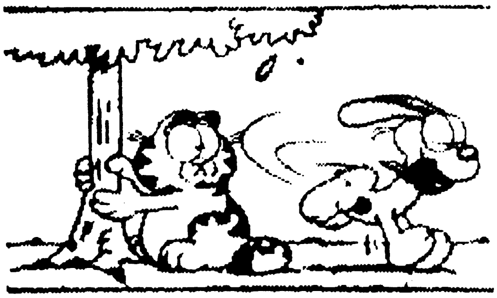

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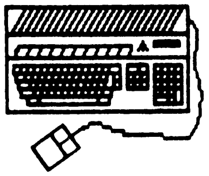


By Mike Fulton, ACAOC OrnJuce

There's a lot of confusion about the various parts of the ST's TOS system. What do words like VDI, XBIOS, and GEMDOS really mean? I'll go through TOS step by step and explain each part. First, a list of what the names stand for:

TOS -- The Operating System
GEM -- Graphics Environment Manager
VDI -- Virtual Device Interface
AES -- Application Environment Services
GEMDOS -- GEM Device Operating System
BDOS -- Basic Device Operating System
BIOS -- Basic Input/Output System
XBIOS -- EXtended BIOS

TOS TOS is the name for the entire operating system of the Atari ST. Everything else is a part of TOS. Although I said earlier that TOS stands for "The Operating System" it has also been said that it stands for "Tramiel Operating System."

GEM GEM is Digital Research Inc.'s (DRI) Graphics Environment Manager. GEM has two different parts, the VDI and the AES, and is descended from DRI's GSX (Graphics System Extension) graphics system, an earlier attempt to create a standard for graphics-based programming. Normally, each computer system has it's own individual routines for graphics, and a program which uses such routines cannot easily be made to run on another computer system. The idea behind GEM (and GSX before that) is that programs written on one system for GEM can be made to run on other computer systems using GEM with only a minimal amount of modification.

VDI The GEM VDI consists of a number of graphics and input/output routines. This part of GEM is a direct descendant of the earlier GSX system. The VDI includes routines for a number of different types of graphics and text output, including a number of shape drawing functions. There are also routines for keyboard input, non-graphics text, and more. By using only GEM VDI functions for these operations, a program can run on any computer which has GEM.

AES The AES is the part of GEM responsible for windows, drop-down menus, dialog boxes, and so on. The AES uses the VDI for all of its input and output functions. The AES is also responsible for sending messages to different parts of the system to reflect the user's choices. For example, if a user selects a choice from a drop-down menu, then the AES gives the program a message telling it that the user picked item x from menu y. The program can then ignore or respond to the choice as it sees fit.

GEMDOS GEMDOS contains the basic character and disk file input/output routines of the ST. It's very similar to the MS-DOS operating system used on the IBM PC and similar machines, both in the arrangement and use of functions. While it's not mentioned in any of the GEMDOS documentation, I believe GEMDOS was designed to be a 68000-based version of MS-DOS, so that the disk and character input/output functions not covered by GEM would be compatible with the functions used on MS-DOS machines also using GEM. GEMDOS is actually divided into two parts, the BIOS and the BDOS.

BDOS The BDOS is the main part of GEMDOS and contains the main character and file-based input/output routines. All the routines for such actions as opening a file on the disk, reading or writing it, closing it, and so on, are part of the BDOS. Also, the main routines for printer or modem input/output are contained in the BDOS.

BIOS The ST's BIOS consists of lower level input/output routines used by the BDOS to perform its functions. On the ST, the BIOS has been extended slightly so that there are also routines which can be used by programmers for other uses, such as accessing the MIDI port.

XBIOS The XBIOS routines are even lower level than the GEMDOS and BIOS routines. There are some routines here used by the BIOS, but most of the XBIOS consists of routines to access the ST's special hardware features. For example, there are functions to find out or change the current screen resolution. There is a function to change the color palette, and so on. The printer port and modem port configurations are also changed by routines contained in the XBIOS.

So there you have the various parts of the ST's TOS system. I hope this will clear up some of the confusion regarding these names and routines. I've heard people say things like: "GEM screwed up my file." But GEM has nothing to do with the disk! It's important that the correct names be used when discussing these things, otherwise great confusion can result.

OSS Personal Pascal
Reviewed by Mike Fulton, ACAOC OrnJuce

Pascal is a computer language designed in the early 1970's by Niklaus Wirth. A structured language, Pascal has rules which force a programmer to use a certain structure, especially when compared to other computer languages such as BASIC. Personal Pascal, from Optimized Systems Software, is an excellent, yet affordable, version of Pascal for the Atari ST.

Personal Pascal is actually made up of several programs, all of which are controlled from a shell program. There is an editor, the Pascal compiler itself, and a linker. The editor is used to enter a Pascal source code file. The compiler converts Pascal source code into an object code file. The linker program is used to add together the compiled object code with routines from special libraries and create an executable program file.

The text editor is nice and has several features designed especially for writing Pascal programs. It's a straight text program, and doesn't use GEM windows and menus. You can use a different editor if you want, but you'll give up some of the special abilities of the system.

One of the editor's nice features is the Save-and-Compile option. For example, say you've just edited a program, and now you want to save it and then compile it. The Personal Pascal editor allows you to save the file, return to the shell program, and start compiling the code with just one keystroke. This saves a lot of time and trouble.

I like the editor, but I do wish that it used GEM. The editor I use for my C programming is GEM-based, and I find that it's generally much faster and more convenient than a text-only editor. Fortunately, I've heard that OSS is working on a new GEM-based editor for a future version of Personal Pascal.

The editor uses the ST's function keys to good advantage. And the Help key gives you a help screen which shows many of the editor's commands. Some operations can be accessed with two different methods, a WordStar type command, and a second command which better uses the ST's keyboard. This allows those already familiar with WordStar to start using the editor right away.

Other features of the editor include an auto-indent feature. To make them easier to read, most people indent certain parts of a Pascal program from the left margin. With auto-indent, the editor will bring you to the indented position when you start a new line, thus saving the need to enter several spaces on each line.

When you have entered a program, you can run the compiler. If it finds an error in your source code, it will tell you what's wrong, and show the line where the error occurred. You are given a choice of continuing the compilation, so that any other errors might be spotted, quitting, or editing the guilty code. There are a number of possible errors, but each has a message telling you what is wrong.

Since not all errors can be caught during the compilation phase, the compiler supports several options for run-time error checking. When you use these options, a compiled Personal Pascal program will stop and give you a message if certain errors occur.

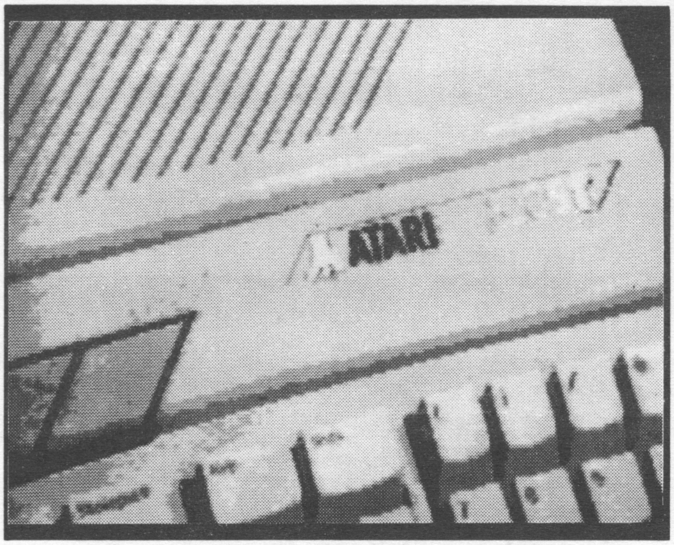
If the compiler doesn't find any errors in the source code, then it will generate an object code file. You have the option of chaining the linker to the compiler. If you choose this option then the linker will be run automatically as soon as the compiler is finished.

The Personal Pascal linker is a welcome surprise. First of all, it uses the same object file and library formats as the DRI linker for the C compiler and assembler in the Atari Development Package. This means that you can include routines written in C or assembly language with your Pascal programs, or vice versa. Also, the Personal Pascal linker is much smaller and faster than the DRI linker. It also produces an executable program file directly, whereas the DRI linker produces a file which must be run through another program before running it. If you have the Atari Development Package, you can even use the Personal Pascal linker with it, instead of the DRI linker.

The Personal Pascal package has the standard Pascal library, with special extensions for random access files and other routines. But the best part is the GEM libraries which are included. OSS has completely started from scratch in writing their GEM support library, and the result seems to indicate that it was worth the effort.

The routines in the Personal Pascal GEM library, combined with the excellent documentation on them in the manual, make learning how to use GEM much easier than with any other package available. There are easy commands for using windows, drop-down menus, and dialog boxes, as well as the ST's graphics functions.

While most of the GEM library consists of easier-to-use versions of the standard C GEM functions, there are several new routines to make programming easier. For example, ST developers use a special program called the Resource Construction Set (RCS) to create menus and dialog boxes for a program. But since most people



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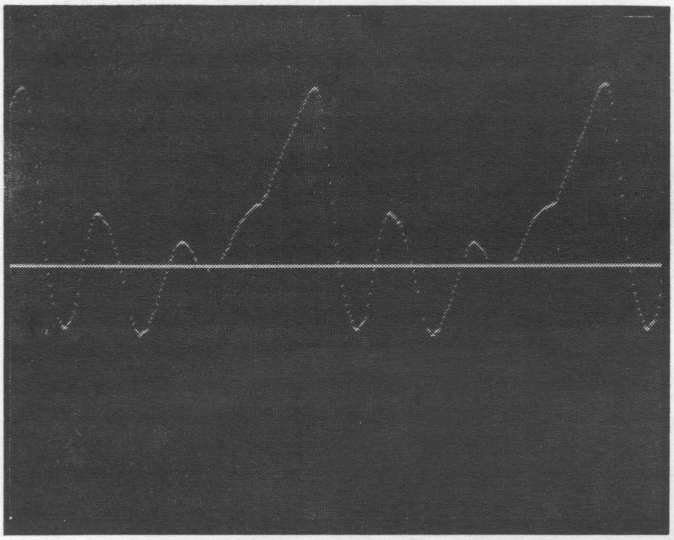

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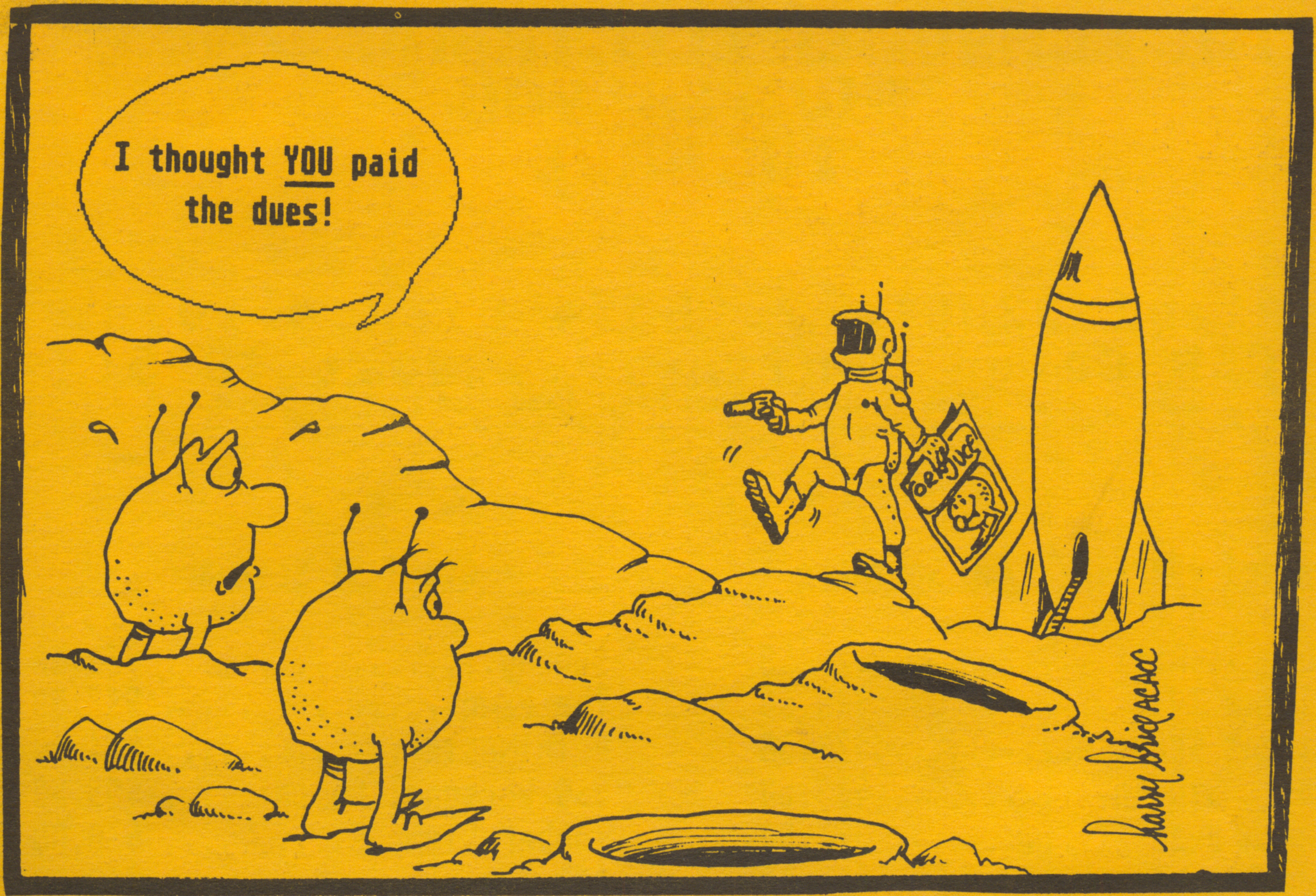

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